

Investment in Small-Scale Forestry Enterprises: A Strategic Perspective for India

Parag Dubey

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Abstract Small and medium enterprises are a key driver of current double-digit industrial growth of India; however, the shrinking domestic log supply has created a unique market opportunity for global forest-based industries. This paper examines the major obstacles to investment in forests at the national and individual firm level and also the policy steps needed to overcome these obstacles. Forest-based small-scale enterprises cite finance as their principal constraint in maintaining their competitive position and developing their activities, with shortages of raw material often taking second place. India has extensive tracts of land suitable and available for forestry; afforestation, although economically viable, requires massive initial investment by both the government and private sectors. India is promoting public–private partnerships in order to increase forest cover to ensure entitlement for the investor over forest produce, along with necessary safeguards for protection of and compensation for the rights of village dwellers and communities, besides providing them additional benefits and livelihood. Governments need to tackle corruption and other forms of rent-seeking, in order to build credibility with firms, foster public trust and legitimacy and ensure their policy interventions are crafted to fit local conditions. Competition requires the Indian forest products industry to accomplish a strong improvement in its economic and technological capabilities. The challenge for forest policy-makers in India is to find the right mix of policies and incentives to attract private investment.

Keywords Private investment · Forest enterprises · Enabling policy

P. Dubey (✉)
Faculty of Marketing, Indian Institute of Forest Management, P.O. Box 357, Nehru Nagar, Bhopal
462003, MP, India
e-mail: dubeyparag@hotmail.com

Introduction

The forest products industry is one of the world's largest industries, with reported annual sales of US \$950 billion and a gross value-added estimated at about US \$354 billion (GoI 2006a). World trade in forest products is valued at approximately US \$200 billion per year, and has quadrupled over the last three decades. Employing over 13 million people in nearly 200 nations, the forest products industry is an economic engine and a vital part of the global environmental and social fabric.

Until recently, India was a restricted market for forest products. The structural reforms initiated in the early 1990s coupled with a cautious and calibrated approach to external sector liberalization, has led to accelerated economic growth, and a ban on most domestic logging has created a unique market opportunity for global forest-based industries. India has emerged as one of the fastest growing markets for wood and other forest products. The forest industry has potential to contribute dramatically to India's sustainable development and economic growth. There is an awakening interest within India for the conservation of the country's forests for the environmental services and local community benefits they provide, among other objectives. Small and medium forest enterprises (SMFEs) represent a promising option for contributing to poverty reduction and resource conservation through sustainable forest management (SFM). India's SMEs are a key driver of the current double-digit industrial growth. They account for a 39% of industrial production, directly contribute 34% to India's exports and employ 20 million people. The development of forestry SMEs into financially viable businesses requires an enabling environment in terms of laws and policies that promote legal access to the resource base, provide incentives for sound forest management, support increased value-adding, and promote the formation of human, social, physical and financial capital.

Several emerging investment constraints impede the growth of forestry in India. These include shortages of raw material (mainly of logs, due to felling bans in many state forests until forest management working plans are completed, as well as numerous restrictions on log supply from private land and farmers); growing concern over environmental issues (mainly in larger production facilities, for example pulp and paper mills); judicial decisions to close unlicensed mills (particularly in the east); economic liberalization and competition from imports (especially pulp imports); and poor management and technical skills (in sawmills, for example, less than 3% of timber meets Indian grading standards) (Prasad 2006). There is a high rate of closures of small-scale enterprises. For example, almost 37% of 23 million small-scale industrial units surveyed during 2001–2003 were found to have closed. Detailed data collected from about 750,000 of the working units revealed that about 14.5% were ailing, with erosion of net worth by more than 50%, delay in repayment of loans by more than 12 months, or decline of gross output during three consecutive years (GoI 2003). Forest-based small-scale enterprises most commonly cite finance as their principal constraint in maintaining their competitive position and developing their activities, with shortages of raw material often taking second place (FAO 2005). Financial viability of timber enterprises is one of the basic tenets of SFM, along with ecological security and social acceptance.

The current forest plantation area in India is estimated at 32.5 M ha, of which 90% is hardwoods, mainly eucalyptus and acacia. India has about 100 M ha of wasteland and 32 M ha of degraded forestland, a small part of which could be allocated for plantations (CPPRI 2002). About 9.5 M ha of land in India is partially degraded with depleted natural rootstock and another 6 M ha is totally degraded and treeless (MOEF 2002). Most such land is physically suitable for growing trees and thus could be put to socially productive uses. However, afforestation requires massive initial investment, generally beyond the means of the landowners. Also, government budgetary allocations of public sector expenditure in successive 5-year plans in the post independence period have been grossly inadequate to cover current and potential needs. The National Bank for Agriculture and Rural Development (NABARD) of India recognized this need and has devised a number of schemes to provide refinance facilities to individuals and organizations. Although the number of forestry schemes refinanced by NABARD has increased rapidly in the past, they currently constitute only about 1% of the total number of loans sanctioned, and only about 2% of NABARD's cumulative loan disbursement. In fact, since 1992, the share of afforestation schemes has declined. A number of factors have been identified as major constraints, including time-consuming and complicated procedures for accessing land; restrictions on harvesting and selling trees; delays in sanctioning and disbursement of bank credit; non-remunerative prices for tree products; and flawed public policies and programs (Balooni and Singh 2003). The Planning Commission, in its approach paper for the 10th Plan, envisaged that national tree cover should be increased to 25% by 2007 and to 33% by 2012. This would mean bringing extensive tracts of land under tree cover and would require a substantial investment by both the government and private sectors.

How can the financial power of private investments be harnessed to maximize the potential of well-managed forests and related industries to contribute to poverty alleviation, protection of environmental services and sustainable economic growth in India? The challenge will be to increase the amount of total investment—foreign direct investment (FDI) or domestic investment—towards sustainable forest operations. This paper examines the major obstacles for investments in forests at the national and firm level, and policy options to overcome these obstacles. Key measures to induce private sector investments in forestry are related to reducing barriers to sustainable forestry arising from inadequate policy frameworks.

Forest Policy in India

The forestry sector in India appears on the 'Concurrent List' of the constitution, as a subject under dual control of State and Central Government, where the State forestry units control and manage the forests within the dictum of National Forest Policy (MOEF 1988). State-initiated forest management in India dates back to 1855 with the declaration of *Charter of Indian Forest* (Gadgil 1991). In 1988, India adopted a new National Forest Policy following the enactment of the *Forest (Conservation) Act* of 1980. The inadequacy of the 1952 National Forest Policy was clearly recognized, as forests had suffered serious depletion after being treated

solely as a revenue earning resource. Also, the diversion of forestlands to non-forest uses had been allowed to continue without compensatory afforestation and essential environmental safeguards. The main considerations in the policy governing the supply of wood raw material to wood-based industries are that fuel, fodder and timber requirements of the local community will take precedence over the raw material requirements of the industry, natural forest areas will not be allocated to industries as concessions for timber harvesting and plantations, imports of wood will be liberalized to reduce 'industry pressure' on forests, and industry–farmer/community partnerships should be established to procure raw material through private sources.

The National Forest Policy has not specifically determined the role of the government in facilitating the raw material availability to the forest industry. The industry has taken the initiative through co-operation with private landowners and farmers, which has increased tree planting on private land. The industry has been motivating farmers to participate in agroforestry by providing them with supporting services including technological inputs, high quality planting material, harvesting technology and marketing support. The co-operation between industry and farmers is appropriate but the timber volumes are not enough to solve the problem of inadequate supply of high quality raw material to the wood-based industries. The policy of import liberalization does not provide a long-term cost-competitive solution to the industry's wood shortage. The cost of imported wood is in many cases too high to make import-dependent manufacturing operations attractive to the industry. The ports are also not well equipped to handle large volumes of wood. However, India has a vast potential of wasteland and degraded forestland, which could be employed for tree-growing. With appropriate incentives and the government's approval, these degraded areas could be made productive through tree planting operations, e.g. on a long-term lease basis. Acknowledging the fact that a number of companies are already considering investments in commercial tree planting abroad, there appears to be a case for creating a more precise forest policy framework in India. Recent years have seen a major shift towards a more decentralized and people-oriented forestry. Joint forest management (JFM), which has taken firm roots in India since 1990, is now a central forest policy in all the 28 states, with about 84,000 committees were looking after 17 M ha of forestland. As noted in the report of the National Forest Commission (GoI 2006b), with greater community control over forest management, annual income from forests could rise from an estimated US \$222 million in 2004 to approximately US \$2 billion in 2020. With increased forest productivity and policy reforms for community forestry, many communities could earn up to nearly US \$22,000 in cash income each year (Rajagopalan 2002). The net value of domestic fuelwood and fodder could be as much as US \$1.1 billion a year nationally, while ecological and ecotourism values from current JFM forests could be as high as US \$1.7 billion annually (World Bank 2006). Without effective investment in forestry this theoretical potential cannot be converted into a reality.

The production and marketing of non-timber forest products (NTFPs) and services gained importance in forest management as total demand for these products increased relative to timber in the last three decades. However, due to lack of

relevant information on the level of output of NTFPs, their economic significance was seldom accounted for in the valuation of forests. Dry deciduous forests in India are a notable case where forest valuation is yet to integrate the NTFP stock, widely used for subsistence and cash income (Mahapatra and Tewari 2005). Most NTFP collectors have little knowledge of, or access to, improved processing and packaging technologies and marketing. Consequently, the intermediaries monopolize trade and gain most of the resource rent (Proffenberger et al. 1990). The principal issue in NTFP development is to ensure that forest people benefit from expanded markets and that a biologically diversified resource base is sustained (Colchester 1989). There is a need to recognize and use appropriate means to take full advantage of market opportunities because processing of NTFP can represent a substantial level of value adding and trade (Lintu 1995).

The National Common Minimum Program (NCMP) of the present United Progressive Alliance (UPA) Government in India contains comprehensive statements of intention for the development and welfare of forest-dependent communities (GoI 2004a). With the enactment of the *Forest Conservation Act 1980*, the rights of the tribals to forest products and other benefits in terms of sacred groves, grazing, fishing and ritual hunting are considerably restricted. Follow-up legislation of the State is needed to confer stronger rights in respect of NTFPs as per the provisions of *Panchayats Extension to Scheduled Areas (PESA) Act 1996* for tribals and other politically weaker population groups who live in and around forests. Progress in this direction has not been satisfactory (Swaminadhan 2006). The National Forest Policy of 1988 stipulates that all agencies responsible for forest management should ensure close association of tribals in decisions on forest regeneration, plantation development and harvesting, so as to have access to gainful employment. As per the *PESA Act 1996*, the *gram sabha*¹ has the authority to decide on the management of natural resources, including the NTFPs. This Act has made it mandatory for States having *scheduled areas*² to make specific provisions for giving wide-ranging powers to the local gram sabha on matters relating to decision-making and development of their community. Implementation of PESA is hampered by most State governments and there is reluctance to enact State laws that conform to the letter and spirit of PESA. A review of the State Acts reveals that most of these Acts have assigned a less prominent role to gram sabha in scheduled areas than was intended by PESA. Some forest products—including sugar cane, bamboo and mahua seeds—have been excluded from the definition of minor forest products (MFPs) in almost all states, which renders the gram sabha powerless to exercise any control over them. This is a breach of the Central law (Planning Commission 2000). Saxena (1999a) argued that monopoly restrictions over NTFP trade should be

¹ A gram sabha consists of all the adult men and women eligible to vote in a village (after attaining 18 years of age) irrespective of their caste and religion.

² The term 'Scheduled Areas' has been defined in the Indian Constitution as 'such areas as the President may by order declare to be Scheduled Areas'. The criteria followed for declaring an area as Scheduled Area are: preponderance of tribal population; compactness and reasonable size of the area; underdeveloped nature of the area; and marked disparity in economic standard of the people.

removed because this will allow competition and hence higher prices and protection through provision of support prices (as being practiced in select agricultural commodities).

The Business Environment for Indian Forestry Enterprises

India has placed major restrictions on the harvesting of timber because its forests have been seriously mismanaged and are rapidly becoming depleted. The massive shifts to new townships and existing urban centres is calling for extensive household and commercial construction countrywide. According to a United Nations study (1995), by the year 2015, 10 of the world's 15 largest cities will be in Asia (excluding Japan); three of these will be in India (cf. only one in 1950). Large increases in wood volume will be required, despite low per capita consumption. Most of the additional demand will have to be met from imports, because of already overstretched domestic supplies. India's import bill for timber and forest products has increased from about US \$195 M in 1985, to approximately US \$950 M in 2006 (Fig. 1). India's annual industrial roundwood imports, mostly of tropical hardwoods, have tripled in the last five years and now exceed 2 M m³. Demand for imported tropical timber is expected to continue to grow and could approach 10 M m³ a year by the end of the decade (ITTO 2004), mostly from Malaysia and Indonesia but with an increasing component of African logs. Indonesia, Malaysia, Myanmar, New Zealand, Nigeria, Togo, Gabon, Ivory Coast and Latin America are the major exporters of timber to India. With increasing incomes in a country that has entered the take-off stage and is poised to grow at about 9% per annum (Anonymous 2007), there is likely to arise still more demand for wood and wood products from the burgeoning rural populace, thereby accelerating the pressure on natural forests. The reduced domestic supply has encouraged the Indian government to allow low-duty imports of logs to maintain the capacity of domestic lumber and plywood manufacturers.

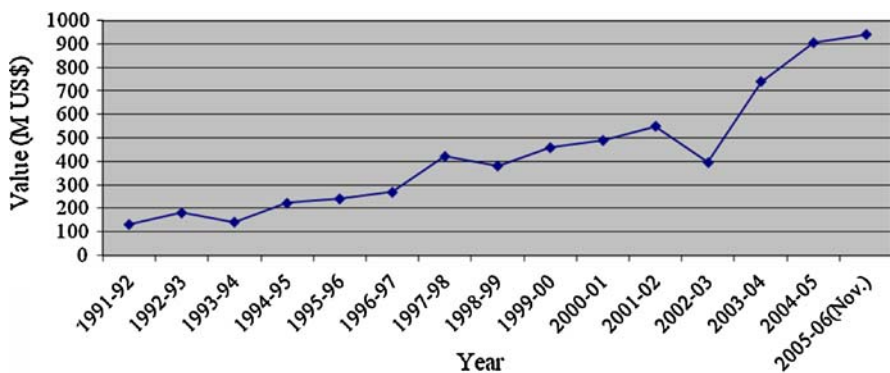


Fig. 1 Total value of wood and wood product imports to India, 1991–2006. *Source:* Directorate General of Commercial Intelligence and Statistics (2006)

Table 1 Projected demand and supply of wood in India (M m³)

Year	2000	2010	2020
Demand	58	950	153
Supply	29	70.55	100.7
Gap	29	24.45	52.3
Demand gap (%)	50	25.7	34

Source: Ganguli (2003)

The forest cover of India was estimated to be 678,333 km², or 20.64% of the land area, against a target of 33% enshrined in the national forest policy (MOEF 1988). Due to the ever-increasing population, which has grown from 361 M in 1951 to 1,028 M in 2001 (GoI 2001), the per capita area of forests was reported to be only 0.08 ha in 2001 (MOEF 2003), amongst the lowest in the world. This is further manifested by the increasing demand of timber in India of 64 M m³ in 1996, which is estimated to rise to 82 M m³ in the year 2006. Only 12 M m³ of this demand was estimated to come from forests, while nearly 31 M m³ was estimated as coming from farm forestry and other woodlots (ITTO 2004). The remaining timber demand has to be met from imports, which have increased greatly, partly due to a highly favourable import tariff (only 5% for logs). Table 1 reports the projected demand and supply gap of wood and wood-based product in million cubic meters for the next 15 years.

The domestic demand and trade opportunities for processed wood products offers scope for value-added exports from India. Milner and Kubota (2005) argued that democratization of the political system reduces the ability of governments to use trade barriers as a strategy for building political support. The liberalization of trade policy in the large Indian democracy has helped information technology service providers to compete with countries worldwide. Similarly, the financial viability of forest sector trade and industry will depend on changing comparative advantage, by making use of technological innovations, communication technology and market skills so abundantly available in India. Timber is a bulky commodity, and India's physical location between dynamic markets in the rapidly developing East Asian countries and oil-rich Middle East and Europe, within easy reach of busy sea routes for international commerce, contribute to competitiveness in timber exports. If this is coupled with timber eco-labelling and certification, there should be little difficulty in placing India's finished timber products on to the lucrative USA market, which currently imports over 34% of the world-traded wood products (Table 2) (ITTO 2005). On the other hand, the existence of a large, rapidly growing, environmentally conscious consumer base in India itself may provide the required leverage to realize considerable benefits from mutual recognition of eco-labelling schemes more prevalent in developed economies (GoI 2004b). Bamboo and rattan furniture and wooden handicrafts could also find a substantial market niche in the developed countries. The annual value of bamboo products in world trade exceeds \$2.5 billion and may reach \$7 billion by end of this decade (Hunter 2003). It is estimated that the Indian bamboo and rattan furniture industry produces goods worth INR50 M. Traditionally, furniture, mats and decoration pieces were exported from Bangalore city (Bhatt 1992).

Table 2 Import value of secondary processed wood products by major consuming countries

Country	Germany	UK	France	Belgium	Netherlands	USA	Japan	Canada	Switzerland	Italy	World
Value (\$M)	5,690	5,652	4,011	2,026	1,779	21,706	3,828	2,105	1,862	1,737	63,891
Share of world trade (%)	8.9	8.8	6.3	3.2	2.8	34.0	6.0	3.3	3.0	2.7	100.0

Source: ITTO (2005)

Most of timber imports pass through Mangalore, Tuticorin, Kandla and Mumbai, which have ports equipped with large timber yards and sawmills (Murthy 2003), the import value of pulp and paper to India during 2000–2001 was US \$890 M, and is projected to be US \$4450 M by 2010–2011 (CPPRI 2002). India along with Chile, Ireland and Malaysia are placed in the high growth group for furniture import markets. Manufactured wood products, previously prohibited, are now permitted with tariffs of 36–40%. With improved economic conditions and continued opening of the Indian economy, these tariffs should drop further, although the wood-processing industry is lobbying government to maintain current rates. India plans to allow duty-free imports of lumber and manufactured products if the imported wood is re-exported in the form of added-value finished products.

Structure of Indian Forest-based Industry

India's forests are utilised essentially for three purposes: (i) as fuelwood, leaf fodder and small timber by local resident communities; (ii) as wood for industrial purposes such as construction timber, plywood, veneer and pulpwood; and (iii) as semi-processed and processed non-wood forest resources such as rattan, bamboo, resin, gums, essential oils and medicinal plants and herbs both for domestic consumption and export. The general pattern of forest resources for industrial utilization has been for housing construction, mechanical wood industries including matches, sporting goods, agriculture implements, furniture, and toys (45%); plywood, fibre board and packaging (30%); and for the pulp and paper industries (25%).

Domestic manufacturing is highly fragmented and unorganized, with carpenters and craftsmen still doing much of the production on the building site. Since economic liberalization, there has been growing competition from low-priced imports and a trend toward removal of protective policies, such as reservation for preferential government procurements. The total size of the Indian furniture industry is estimated by industry experts to be worth approximately INR350 billion (FTC 2005), with an estimated 85% of this falling into the unorganized sector. Indian small scale forest enterprises (SSFs) are generally inefficiently run, the quality of products is low and there is lack of standardization, so they are uncompetitive internationally. With little standard sizing in the door and window industry in India, high-volume production plants that specialize in low-cost, standard-size products have not been able to expand.

Nationally, 90% of wood-based products are manufactured in the private sector, yet 96% of the forest area is owned and managed by government (GoI 2006b). Wood-based industries procure 30% of their raw material from government forests, 10% from farmers and social forestry, and 60% from the open market which also includes imports (Chaurasia 2004). India's forest-based secondary industry encompasses a wide range of small, medium and large-scale firms that process logs into a variety of products for the domestic market. Many poor tribals earn their livelihood through fuelwood and NTFP collection and sale. Non-timber forest product based SSFs alone provide up to 50% of the income of 20–30% of the rural labour force in India (Saigal and Bose 2003).

Timber usage volumes have increased considerably due to the demand for forest-based products which has risen at a steady rate of 10% per year since 2001 (Chaudhary 2006). The paper industry in particular, is plagued by wood fibre shortages. There are over 500 paper mills nation-wide. Production capacity is almost equally divided into three main fibre sources (36% from forests and declining, 29% from agricultural residues and 35% from waste paper) but less than 10% of mills are forest-based.

Most of the paper mills are small, with only 34 mills having a capacity of over 33,000 tonnes, cf. state-of-the-art machines which process 400,000–600,000 tonnes/year, and have a trim width up to 10 m. Half of the newsprint capacity is on very small machines, which can be considered as shut-down candidates in the long term. In the wood free category, 75% of the production capacity is on machines that are smaller than 40,000 tonnes/year, and standard grades have no competitive potential in the long term. Corrugated cardboard is produced on very small machines.

The paper industry's demand for wood is expected to grow from 5.8 Mt in 2000 to 9 Mt by 2010, and to over 13.2 Mt by 2020 (assuming that part of fibre needs are covered by increasing use of waste paper and agricultural residues). However, import duties and transport costs make imported waste paper expensive. High fibre costs weaken the cost competitiveness of Indian newsprint producers, even in the domestic market. About 0.6 M ha of land would be required for plantations to meet the paper industry's demand for wood.

India has relatively low labour and fuel costs, although lower labour productivity and variation in fuel quality reduces the advantage. Wood raw material prices are relatively high, as are electricity costs. The unit consumption of electricity, water and chemicals, especially in the small mills, is high due to obsolete technology. About 60% of the sawmilling capacity is in small mills. With this structure and fibre pricing, production is not competitive, even in the domestic markets; for long-term competitiveness all the currently operating machines need to be considered for technological upgrade. Water consumption and effluent flow are high in Indian forest and agriculture-based mills. Plantation trees and recovered fibres are preferable to agriculture-based fibres to improve paper production machine speed, product quality and ultimately competitiveness.

International Lending in Indian Forestry

Many international funding agencies are supporting several forestry projects in India, including the Andhra Pradesh (AP) and Madhya Pradesh (MP) Forestry Programs, and the Global Environment Facility (GEF) funded India Eco-development Project of the World Bank.³ The AP project is designing and implementing a JFM program,

³ The Global Environment Facility is the international financing mechanism for the Convention on Biological Diversity (CBD). The GEF is the financing mechanism for the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Convention to Combat Desertification (UNCCD) and the Stockholm Convention on Persistent Organic Pollutants. It also provides support to the Cartagena Protocol on Bio-safety, the Montreal Protocol of the Vienna Convention on Ozone Layer Depleting Substances, and various agreements on the protection of international waters.

using the Objectives Oriented Project Planning (OOPP) workshop method of community participation which involves a process of participation analysis, problem and objectives identification, and an action program with communities (World Bank 1996). The MP project seeks to create a state-wide forestry project to include institutional reform, improved production of timber and non-timber forest products and biodiversity conservation. *Increased income* of populations living in and around forest areas is an objective of the project, and will involve ‘introducing local participation’ into forest protection and management. An indication of the Bank’s move towards more innovative methods of involving local people is the Village Resource Development Plan (VDRP) created through participatory planning and management of forest resources (World Bank 1994). The Eco-development Project has been a primary focus in involving local people in the management of designated protected areas and working with them to build alternative livelihood activities. This includes participatory impact assessments of protected areas and local people interactions, participatory micro-planning, creation of a ‘village eco-development fund’ to facilitate alternative livelihood activities, and strengthening the capacity of implementing institutions to carry out these activities (Brahmane et al. 2000).

As observed from a Bangladesh case-study (Khan 2006), the immediate implications at the sub-continental level for social forestry on the part of international aid agencies and government are: an obsession of the field offices with the physical targets often at the cost of over-shadowing local demands and choices; creation of a rigid blueprint atmosphere where there is little room for staff innovation and flexibility in operation; creation and conveyance of a missionary image for the donors; and emergence of a means of influencing and regulating government actions by the donors. Government’s enthusiasm for pursuing forestry activities can largely be explained by its concern for attracting greater external funding.

Domestic Investment in Forestry

When discussing the need to attract investment to the forest sector in India, many organizations tend to focus on large-scale international investors. Although developed countries now consume approximately 70% of industrial roundwood, the consumption of industrial roundwood in developing countries grew by 3.2% per year during 1961–1997, in contrast to developed countries where it grew by only 0.6% per year (Victor and Ausubel 2000). In the forest sector, it would be logical for many of the new global private investors to try to capture the financial gains from these rising domestic markets in developing countries, where the majority of the world’s natural tropical forests are located (Canby 2006). This aligns with global trends which show that while FDI remains important in India for foreign exchange earnings, skills and technology transfer, the bulk of private investment remains domestic across all sectors.

The total outlay for the Indian forestry sectors in all nine Indian 5-year economic development plans ranged from 0.37 to 1.03% of total public sector expenditure

Table 3 Outlay in forestry sector in successive plans

Plan	Period	Total public sector expenditure (M US \$)	Outlay for forestry and wildlife (M US \$)	Forestry share of plan outlay (%)
First	1951–1956	459.78	1.69	0.37
Second	1956–1961	1,066.67	4.71	0.44
Third	1961–1966	1,666.67	10.19	0.61
Post-third	1966–1969	1,486.00	9.38	0.63
Fourth	1969–1974	3,533.56	19.87	0.56
Fifth	1974–1979	8,634.00	46.41	0.53
Annual	1979–1980	2,788.89	15.18	0.54
Six	1980–1985	21,666.67	153.89	0.71
Seven	1985–1990	40,000.00	413.13	1.03
Post-Seven	1990–1992	30,932.67	314.00	1.01
Eighth	1992–1997	29,800.00	280.12	0.94
Ninth	1997–2002	190,933.33	1,819.79	0.95

Source: GoI (2006b)

(Table 3). The problems and constraints in forestry development in India include: lack of awareness about multiple roles and benefits of forests; lack of linkage between management and livelihood security of the people; low level of technology; inadequate research and extension; weak planning capability; wastage in harvesting and processing; market imperfections; overemphasis on government involvement and control; low level of people's participation and involvement by NGOs; lack of private sector participation; unwanted restrictions on felling, transport and marketing of produce from non-industrial forests; lack of inter-sectoral coordination; and weakness and conflicting roles of public forest administration (Prasad 2006). The main reason for this state of affairs is that the forestry sector has neither gained recognition for importance, nor attracted the imagination of planners (Planning Commission 2001). Forestry makes a relatively small national economic contribution. Since other sectors—including agriculture, power, transport, health care and rural development—attract more public and government attention, the forestry sector has not been able to obtain its due share in plan outlay for public sector expenditure. It is considered neither an economic sector nor a social sector, and is therefore given low priority in national planning.

While efforts are under way to raise plantations, and to restore degraded forests (Rao et al. 2006), these have had little impact on the net availability of timber to date. Among the constraining factors are the small budgets for reforestation and afforestation, growing emphasis on the environmental and social services provided by forests at the expense of timber production, and competitive demand for land from the country's burgeoning population. This is clearly indicated by estimates of spending by the Ministry of Environment and Forest (MOEF), GOI, in the year 2002–2003. About 78% of the total government expenditure for forestry and wildlife was for R&D, education and training, cf. 9% for forest protection, 5% for strengthening forest division, and 4% for each of forest survey and policy

Table 4 Gross domestic product from forestry and logging at 1993–1994 to 2002–2003, current prices

Years	Current price estimates			1993–1994 price estimates		
	Total GDP (INR in billion)	Contribution of forestry (INR in billion)	Share (%)	Total GDP (INR in billion)	Contribution of forestry (INR in Billion)	Share (%)
1993–1994	7,813.45	114.54	1.5	7,845.13	114.54	1.50
1995–1996	10,732.71	133.90	1.2	8,995.63	117.01	1.30
1996–1997	12,435.46	144.93	1.2	9,700.83	118.65	1.20
1997–1998	13,901.48	162.49	1.1	10,165.95	121.14	1.20
1998–1999	15,981.27	178.40	1.1	10,827.48	123.01	1.10
1999–2000	17,618.38	195.55	1.2	11,483.68	127.53	1.10
2000–2001	19,029.98	224.22	1.2	11,985.92	130.64	1.10
2001–2002	20,909.57	243.41	1.2	12,678.33	132.44	1.00
2002–2003	22,494.93	270.13	1.2	13,183.21	135.73	1.00

Source: CSO (2004) in GoI (2006b)

(GoI 2006b). However, this is not reflected in terms of industrial development in forestry, perhaps because of inappropriate prioritization.

Over the 10 years 1993–1994 to 2002–2003, forestry and logging contributed about 1–1.5% of Indian GDP (Table 4). This is a greatly distorted figure, because the large unrecorded removals from the forests are in most cases much more than the recorded removals, and the intangible benefits of forests are not included when calculating the contribution of forests to GDP, let alone to the food and ecological security and survival. Forests are increasingly being looked upon as major performers in poverty alleviation programs.

India has a remarkable chance to rationalize forestry goals between commercial, environmental and social interest, simply by blending commercial interests and conservation objectives in the sector through a matrix of financing mechanisms which is based on financing type and source (Crossley et al. 1997). Among the key factors affecting the current timber marketing trends and future trade prospects are the national policy and institutions, demography, economic and social development, and technological and environmental changes, as well as location of strategic sea lanes of commerce for international trade in timber and other products. As part of the policy for economic reform now underway, the private sector is poised to play an increasingly important role in the envisaged public private partnership model (PPP) and this could be a driving force for exports of timber products. PPP could also contribute to the efficiency of the forest sector and help leverage investment resources for its sustainable development. The greater liquidity provided by such investment should reduce vulnerability to volatility from which the sector suffers, and smoothen out any demand shocks. Joint ventures, partnerships and alliances that are being forged in other sectors of the economy could pave the way for the forest sector to become a major market player, if these developments embrace forestry.

Clearly, one of the greatest and least-addressed obstacles constraining the expansion of sustainable forestry in India is the industry's lack of integration into

the capital markets, and consequently its poor access to mainstream private capital. This is a particularly critical issue given the extent to which private capital flows to developing countries are rapidly outpacing public sector financing.

Forest Social Responsibility

Forest-based income can be an important, and sometimes the only, alternative to urban migration or forest clearing for the landless rural poor. Why, until recently, has relatively little been done to measure the contribution made by the forestry to support and strengthen the goals of rural development and national socio-economic objectives? Forest department authorities are now concerned with this question for several reasons. First, using forest resources to better the lives of rural people is a common goal of Indian state governments and is therefore a prime responsibility of their forestry managers. Second, providing income to those who might otherwise become shifting cultivators takes the pressure off forest areas. People who make a sustainable living from the forest are more likely to support efforts to protect and improve the resource.

India has adopted an innovative, low-cost, self-employment strategy to create at least 100 M new jobs in the next 10 years in order to raise the living standard of its poor (Jacobs and Swaminathan 2004). According to the World Bank (2004), forest resources directly contribute to the livelihoods of 90% of the 1.2 billion people living in extreme poverty globally and who depend on forests to enrich their soil, provide food for their livestock and protect their water supply. For these people, forests are a source of food, energy, shelter, medicine, commerce and spiritual well-being. ILO (1988) reported that 63% of employment from forest-based commerce lies in the informal economy, predominantly supporting the livelihoods of the poor. At the same time, it is poverty that is most often the root cause of increasing deforestation levels. Employment generation in the organized and capital-intensive segment of Indian industry has been relatively static; however, employment opportunities have increased rapidly in the unorganized sector in the Indian economy over the past two decades. About 25% of India's potential labour force is unemployed (Virmani 2006), and most of the jobless are in rural areas. Between 1993–1994 and 1999–2000, India's annual employment growth fell from 2.7 to 1.07%, despite the annual GDP having grown from 5.2 to 6.7% (CSE 2004). Why has this economic growth not resulted in employment generation? Jobs in the agriculture and organized sectors (that is, the public as well as private units registered under parliamentary acts) are at a premium, and the government's gargantuan employment generation programs have not lived up to their promise. There is a clear need to look beyond growth-induced employment generation, towards rural-based, non-organized sectors including forestry and related activities. When evaluating the benefits of Himachal Pradesh forests in India, Verma (2000) found that total employment generated is 4.84 M man days which have a monetary value of US \$6 M. With supportive policy initiatives and resource allocation for raising productivity, forests can generate and ensure livelihood for the rural households in India. However, studies have shown that there is a high percentage of

the population below the poverty line in forested areas, varying from 44.0% in Chhattisgarh to 69.0% in south Orissa, as against the national average of 37.2% (Saxena 1999b). Therefore, the existing situation for forestry in employment generation needs correction through policy interventions.

The Importance of Small and Medium-sized Enterprises

Forest-based small-scale enterprises where forest-based economic activities are undertaken generally at the individual or household level, normally employ either members of the family or close relatives and neighbours, and salaried labour is usually negligible. The forest products-related industry is highly diverse in India. It spans a broad range of products (Table 5), services, firms and entrepreneurs, from individuals working informally, to small and medium-sized forest enterprises (SMFEs), to local and national manufacturing companies. Primary manufacturers include chainsaw operators and small sawmillers, as well as large corporations. World Bank (2005) found that more than 80% of the sawmilling, match making and wood panel (plywood) industries in India are small in production scale (Table 5). All have the potential to invest productively, create jobs and expand, thereby contributing to economic growth and poverty reduction. Each type of business (or investment opportunity) can be affected differently by changes in international and domestic markets, as well as by changes in governmental policies and the general domestic business and investment environments.

Reflecting the fact that the overwhelming majority of global wood products are sold domestically, most forest product processing operations (excluding pulp and paper) are small to medium in scale. Globally, among small, medium and large-sized enterprises the first two represent one of the faster-growing industrial sectors. Logging by SMFEs in Guyana contributes an almost equal amount to the revenue of the Guyana Forestry Commission as do large enterprises (Thomas et al. 2003). In China, more than 90% of the total value of wood products is generated by SMFEs (Sun and Chen 2003). Because of their abundance, SMFEs employ large numbers of rural people. An estimated 17.4 M people (in full-time equivalents) worldwide earned their living in the 1990s from formal sector employment in forestry, wood industries, furniture and pulp and paper, as against an estimated 30 M employed in

Table 5 Components of secondary forest industry in India

Sub-sector	Number of production units	Capacity share of small scale plants (% of production)
Sawmills	23,000	82
Match production	12,000	82
Wood-based panels	506	85
Pulp and paper, paper board	406	66
Door and woodworking plants	98	25

Source: World Bank (2005)

the informal sector (ILO 2001), where the size of enterprise is generally very small. While SMFEs can potentially make a huge contribution to a country's overall economic development and poverty reduction, they also face greater constraints to growth than do larger or multinational firms. When looking at expansion opportunities, small-scale forest enterprises in India face a wide array of potential problems, including shortage of finance (in particular working capital, worsened by problems of access to available finance and its cost); raw material shortages (due to overexploitation or other natural causes, and often compounded by wasteful processing, restrictive regulations, poor distribution and lack of working capital); small and insecure markets (due to low rural incomes, seasonality, poor access to large markets and severe competition); non-availability of appropriate technology in the form of suitable tools and equipment; managerial weaknesses (which aggravate all the other difficulties since small-scale enterprises often lack capacity to analyze situations and minimize adverse impacts of problems); and lack of organization of the enterprises that would enable them to make effective use of available support services.

Many smaller enterprises—in particular those that are community-based—have only recently been able to register and move from the informal sector to more formal arrangements. As new enterprises, they must quickly gain experience and resources in order to comply with government regulations, and with quality demands of export markets. There is no substitute for good governance in fostering a positive business investment climate. Good governance, including control over illegal activities, will foster responsible private sector investment and improve its contribution to social and economic development. Many potentially profitable investment opportunities in India are not exploited because of the poor business environment. Policy-related risks dominate many firms' concerns and cripple incentives to invest, innovate and increase productivity. Improving the investment climate goes hand in hand with enhancing human capital. Increased funds and modern technology will not improve an enterprise that lacks sound management, whole products,⁴ parts and spares, sales channels and successful buyer relationships. For domestic firms, inadequate management and marketing skills of workers are serious obstacles to forest operations. Many firms will need assistance to participate in international finance markets or trade in the carbon market.

New Paradigm for Forest-based Industry

In the forestry sector, the most common example of a natural advantage is the presence of a large natural forest resource. Thus, until recently, natural advantage in forestry existed in countries with large land areas, high levels of forest cover and generally low population densities. Recently however, industrial roundwood production from natural forests has been constrained by resource depletion and increased regulation. One consequence of this is that natural advantage is gradually

⁴ A *whole product* is a generic product augmented by everything that is needed for the customer to have a compelling reason to buy.

moving toward countries where trees grow the fastest. In other words, natural advantage in the forestry sector is gradually shifting away from countries with the highest levels of forest resources to countries that have the highest forest productivity. In terms of hardwood species, recently developed fast-growing plantations of eucalypt species in tropical areas demonstrate a considerable natural advantage in pulpwood production. Similarly, in terms of softwood species, natural advantage is gradually shifting towards tropical and subtropical regions where pine is grown.

India's industrial policy in respect of forest-based industries till recently followed the same pattern as for the other industries, i.e. a need by domestic industries for protection. A heavy import tariff duty was levied on paper and paper products and also on panel products which made the landed cost of paper from international sources much more than the domestic price. The import duty on paper products was as high as 150% (GoI 1999). The protection given to panel industries has resulted into higher domestic prices than prices of imports. This protection resulted in the domestic industries remaining inefficiently small, lacking economies of scale and using outdated technology. There was no external market threat to promote efficiency, and the industry's complacency was further reinforced by ensuring below-market price of raw wood material from government forests.

Importers currently pay import duty of 9.3% on round logs and 15% on sawn timber, port charges (which include documentation and plant protection and quarantine (PPQ) of US \$56 plus US \$1.68/m³, transit pass (TP) of US \$0.02/m³), State value added tax of 12.5% (and 4% central tax for product being transferred out of state), and 16% excise duty for manufacturing units. Despite the seeming plethora of duties, taxes and fees, the effective customs duty applied has decreased from 9.2 to 5.1% on logs and from 30 to 15.3% for sawn lumber. The effective customs duties on all other wood articles have been reduced from 56.8 to 34.4% (Ganguly and Eastin 2005). Higher tariffs on processed products inhibit development of export-oriented high value added production units. Similarly, sanitary and phytosanitary barriers can create restrictions for exporters, and building standards bottlenecks continue to be a major factor constraining high volume production specializing in low-cost, high quality, standard-size products.

India's new industrial policy has opened up the market for internationally competitive goods. With the rising cost of raw material and reduced tariffs, other countries are exporting at prices which India's inefficient industry is unable to match. Foreign companies can now invest up to 100% in most of the manufacturing industries in India, including forest-based industries. The dividends earned are exempt from taxes and may be repatriated to their country of origin. It is thus obvious that many foreign companies view India as a country with a strong commercial appeal, both as an emerging market and as an economic partner in possible collaboration between small to medium-sized companies.

The Gujarat State Government has taken positive steps for the timber sector by declaring Kutch region as a 'Wood Free Zone'. Kutch is now all set to become Asia's largest centre for wood-based industries, as 200 plywood units and 500 sawmills are likely to set up within a year. Out of all the ports in India, Kandla in Kutch has the greatest volume of imports with volume increasing by 5–10% per

year. Kandla distributes timber to all of North India and Delhi. At present, Kutch has 200 sawmills and 31 units engaged in the manufacturing of plywood. Imports through Kandla totalled 2.0 M m³ of timber worth US \$556 M during 2005–2006 as against 1.6 M m³ worth US \$467 M in 2004–2005, mainly from Malaysia, Burma, Africa, Latin America and New Zealand. The growth in volume of imported timber has been between 20 and 25% for each of the last 5 years (Chaudhary 2006).

Threats faced by the forestry industry can be converted into opportunities by modernizing the forest information system and by further reducing the tariff and non-tariff barriers to facilitate imports and market diversification. Timber is a major source of community income, so there is an imperative to maintain supplies in the long term. Inappropriate deforestation can be reduced through policy reforms that enable smallholders to conserve and manage their resources (Sunderlin 1997). Policy tools must adapt to achieve the goals of multi-functional forestry across a broad range of ownerships and values (Cubbage et al. 2007).

Public–Private Partnerships: A Proposed Model

In order to achieve the target of increasing India's forest and tree cover from 21% at present to 33% by 2012, the Government of India is promoting public–private partnerships. Since the government does not have enough funds to support agroforestry projects to achieve the reforestation target, it has proposed that industry be given control over degraded forestland, wasteland and other public land for growing trees under a 'multi-stakeholder partnership.' The framework for public–private partnership for attracting private investments for afforestation of degraded forestlands states that: 'There is negligible private-sector investment in forestation and tree planting. Budgetary support for forestation and tree planting by government agencies is grossly inadequate against the required annual investment of US \$1778 M for achieving the 2012 target; present investments are only US \$356 M per year.'

The action plan states that the proposal would ensure a 'clear and secure legal entitlement of the investor over forest produce, along with necessary legal safeguards for protection of and compensation for the traditional rights of village dwellers and communities, besides providing them additional benefits and livelihood.' It suggests 'rationalization of regulations', whereby restrictions over the felling of trees and transportation of timber by the private investor or industry will be eased, and state forest departments will sign MoUs to give felling and transit permits for 'all produce'. Investors will be selected by inviting expressions of interest followed by fixation of entitlement packages for local communities, which will receive a 25% share of the final timber harvest or 100% share of non-timber produce. The local community will be allowed to choose tree species to be grown on 10% of the identified land, with all benefits passing to the community.

Once a bid document and the draft MoU are finalized, each shortlisted candidate will have to submit a technical bid (outlining their work plan) and a financial bid (specifying the percentage share for the land-owning agency). The bidder offering the highest net present value of the payment would enter into a legally enforceable

four-way MoU with the land-owning agency, the forest department and the local community. The investor will also have to deposit 10% of the estimated NPV before it gains land from the land-owning agency for between 10 and 70 years. Villagers living around the identified land would have the first right of refusal to all unskilled employment required by the investor. Unless modified in the MoU, the local community will also retain full access to the land. In turn, the community will be responsible for taking reasonable steps towards prevention and reporting of any illicit felling or unusual happenings (Ranjan 2006).

Policy Implications

The development of flourishing forest enterprises based on a sustainable supply of forest raw materials and services requires investment but, unfortunately, significant investment in forests is rare in India. A policy paper by World Bank (1994) maintained that market and policy failures combine in the forest sector to undervalue the resource base severely, leading to excessive rates of depletion and inadequate investment in tree planting. Governmental policies and behaviour will play a critical role in shaping the investment climate, by ensuring that firms are not saddled with unnecessary costs and procedures, stabilizing uncertainty, and eliminating unjustified barriers to competition. Governments need to tackle corruption and other forms of rent-seeking, to build credibility with firms, foster public trust and legitimacy and ensure their policy interventions are crafted to fit local conditions. These approaches have huge potential in India, where imbalances between the supply of and demand for fibre are conducive to developing new partnership models in which communities supply large quantities of timber and fuelwood to processing mills and markets.

The shortfall between demand and supply of timber could be met by the improved timber processing and marketing, to compete successfully against a range of substitute products. Given that most forests and woodlots in India are producing far below their potential, the situation calls not only for direct measures for enhancing forest productivity but also an immediate reassessment of the indirect measures to protect domestic tree growers at markets. Foreign competition will require the Indian forest products industry to accomplish a strong improvement in its economic and technological capabilities. Furthermore, this will have to be done in a manner that protects the environment and its diversity and promotes social development.

Many international funding agencies are supporting several forestry projects in India; however, national policies and legislation fail to provide an internationally competitive and conducive business environment. Traditionally, forests have always had inappropriate domestic resource mobilization, perhaps due to inappropriate prioritization which has resulted in large-scale unemployment and poverty. However, there are successes with the diverse base of small and medium forest-based enterprises that can further strengthen the foundation of a fruitful public–private partnership in the achievement of inclusive and sustainable growth.

There are inadequate internal savings and a lack of accessible formal capital markets able to finance major investments in forest resource development, hence greater policy support is needed, as extended to other sectors of Indian economy. The market for trading in carbon emission credits represents another option for generating funds and drawing the private sector into forestry production and marketing. The challenge for forest policy-makers in India is to find the right mix of policies and incentives to attract private investment that can partner with communities.

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